
Telecommunications Theory

The Institute is involved in research in both wireless and wireline telecommunications. The rapid growth of telecommunications in the last 50 years has caused crowding in the radio spectrum. New technology requires a new understanding of the behavior of radio waves in all parts of the radio spectrum. The Institute studies all frequencies in use, extending our understanding of how radio signal propagation is affected by the earth's surface, the atmosphere, and the ionosphere.

This work is resulting in new propagation models for the broadband signals used in new radio systems.

The Institute's historical involvement in radio-wave research and propagation prediction development provides a substantial knowledge base for the development of state-of-the-art telecommunication systems. In another research area, the Institute develops perception-based quality measures for multimedia services.

ITS transfers all of these concepts and technology to both public and private users, where knowledge is transformed into new products and new opportunities.

Areas of Emphasis

Adaptive Antenna Testbed

The Institute has developed an advanced antenna testbed to be used in the investigation of "smart" antennas, which can greatly increase the capacity of wireless communications systems. The project is funded by NTIA.

Audio Quality Research

The Institute conducts research and development leading to standardization and industry implementation of perception-based, technology-independent quality measures for voice and other audio communication systems. Projects are funded by NTIA.

Radio Channel Effects on Networks

The Institute, a recognized leader in radio channel measurement and modeling, is involved in research to assess the effects of the wireless communication channel on communications system network performance. The project is funded by NTIA.

Video Quality Research

The Institute develops perception-based, technology-independent video quality measures and promotes their adoption in national/international standards. Projects are funded by NTIA.

Wireless Propagation Research

The Institute conducts research on the radio propagation channels that will be employed in new wireless communication technologies such as personal communications services and third generation wireless (3G). Projects are funded by NTIA and DoD.